

CLAIMS

1. Process for manufacturing a prosthetic joint with at least one loaded surface that consists at least partially of polyethylene, comprising compressing in a mould to a desired shape, between a hollow mould part and a plug, one or more layers of a woven fabric of drawn gel-spun polyethylene fibres at a pressure of at least 0.05 MPa and at a temperature between 120 and 165 °C and below the crystalline melting point of the polyethylene at the prevailing temperature and pressure, without a matrix material being present, and at least the woven fabric in a layer situated on a loaded surface comprising at least 90 wt% of polyethylene fibres with a titre of at most 1000 denier.
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2. Process according to claim 1, wherein the woven fabric in a layer on a loaded surface is an i-over-j woven fabric of fibres with a titre t denier with an exposed fibre length on the surface of at most $\sqrt{t} / (250/\max(i,j))$ cm.
- 15 3. Process according to claim 2, wherein the exposed fibre length on the surface is at most $\sqrt{t} / (330/\max(i,j))$ cm.
4. Process according to claim 3, wherein prior to compression the woven fabric is kept at a temperature of between 120 and 145 °C for a period of between 1 and 30 minutes and under tension.
- 20 5. Process according to any one of claims 1-4, wherein the polyethylene has an IV, measured in decalin at 135 °C, of 4-40 dl/g.
6. Process according to any one of claims 1-5, wherein at least the woven fabric in a layer situated on a loaded surface comprises at least 90 wt% of fibres that consist of monofilaments with a titre of at most 10 denier per filament.
- 25 7. Process according to any one of claims 1-6, wherein at least the woven fabric situated in a layer on a loaded surface is a 1 x 1 plain weave fabric.
8. Process according to any one of claims 1-6, wherein the woven fabric is a multi-layered woven fabric.
9. Process according to any one of claims 1-6, wherein the woven fabric is a three-dimensional woven fabric.
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10. Process according to any one of claims 1 – 9, comprising bringing the woven fabric, under tension, to a temperature between 0 and 5 °C below the temperature at which compression takes place, contacting the woven fabric brought to the required temperature with the hollow mould part under the pressure of the plug for a period of between 1 and 30 minutes, and
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- compressing the woven fabric under a pressure of at least 0.05 MPa for a period of between 2 and 30 minutes.
11. Process according to claim 10, wherein at least the woven fabric in the layer situated on a loaded surface has an exposed fibre length on the surface of at most $\sqrt{t}/(250/\max(i,j))$ cm.
- 5 12. Process according to claim 10 or 11, wherein the prosthetic joint is a hip socket.
13. Prosthetic joint with a crease-free loaded surface and formed from one or more layers of woven fabrics of drawn, gel-spun polyethylene fibres
- 10 compressed onto each other, wherein the average ratio of the dimension of a compressed fibre on the surface perpendicular to its longitudinal direction and measured along the surface and the corresponding dimension perpendicular to the surface is at most 15.
14. Prosthetic joint according to claim 13, wherein said ratio is at most 9.
- 15 15. Prosthetic joint according to claim 14, wherein said ratio is at most 7.
16. Prosthetic joint according to any one of claims 13-15, wherein the IV, measured in decalin at 135 °C, of the polyethylene is between 4 and 40 dl/g.